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ABSTRACT OF THE DISCLOSURE

A silicon-on-insulator (SOI) substrate is provided which includes a silicon substrate having an upper surface, a first insulating layer having a lower surface extending horizontally over the upper surface of the silicon substrate, and a silicon layer having a lower surface extending horizontally over an upper surface of the first insulating layer. A second insulating layer is formed over an upper surface of the silicon layer of the SOI substrate. Impurity ions are implanted into the silicon layer of the SOI substrate such that a peak ion concentration along a vertical depth of the silicon layer is located between an intermediate horizontal plane of the silicon layer and the lower surface of the silicon layer inclusive, wherein the intermediate horizontal plane extends horizontally within the silicon layer at half a vertical depth of the silicon layer. A gate electrode is formed on the second insulating layer.

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